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CREDIT UNIONS IN NIGER: THE WOCCU EXPERIENCE

by

Korotoumou Ouattara,

Mayada M. Baydas

and

Douglas H. Graham

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Rural Finance Program
Department of Agricultural Economics
The Ohio State University
2120 Fyffe Road
Columbus, Ohio 43210-1099

Abstract

Credit union strategy in developing countries focusses primarily on the savings mobilization first approach. By generating local resources, CUs like the ones in Niger have the ability to become one of the most important source of financial resource for farm household as well micro and small scale entrepreneurs.

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I. INTRODUCTION

1. History of the Credit Union Movement

The World Council of Credit Unions (WOCCU), with headquarters in Madison, Wisconsin, is the worldwide representative organization of credit unions (CUs) and similar cooperative financial institutions. For its developing country members, e.g. Niger, WOCCU provides technical and development services, including the design and implementation of long-term programs in institutional development, short-term technical assistance and training projects, and assistance in mobilizing human and financial resources.

WOCCU estimates that there are 37,078 CUs in the world, with a membership of more than 88 million people, with a penetration rate of 5.13 percent (WOCCU, 1994 statistical report). Savings are estimated at US $ 377.7 billion, loans at US $ 250 billion, reserves at US $13.8 billion and assets at US $ 418.4 billion. In developing countries, credit unions play a significant role in urban and rural financial markets where the majority of the population is not served by the formal sector. Credit union strategy in developing countries focusses primarily on the savings mobilization first approach whereby accumulated local savings is granted as loans to members-savers instead of relying on

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[1] The authors are post-doctoral researchers and professor respectively at The Ohio State University, Department of Agricultural Economics, 2120 Fyffe Road, Columbus, Ohio, 43210-1066. Telephone: (614) 291-8014. Fax: (614) 292-7362.

outside funding. By generating local resources, CUs have the ability to become one of the most important source of financial resource for farm household as well micro and small scale entrepreneurs.

The primary objective of a credit union is to provide safe and efficient savings and loan services to its members at a reasonable cost. Credit unions are organized under rules and regulations that are fairly uniform wherever they exist. They are democratically-run institutions based on the principle of one-person, one-vote and have a common bond that link members. In open-bond or community based CUs, members are from the same community, village, or residence area. In occupational or closed-bond CUs, members belong to the same profession, or are engaged in the same occupation.

Credit unions mobilize savings and provide loans to their members only. The member share of a CU is crucial in determining eligibility and size of loan. Credit union members have a right to a multiple of their share, frequently two to one (2:1). At times, deposit accounts in some CUs are used (in addition to shares) as the basis to establish the loan multiple. There is also usually a formal limit on the size of a single loan in a credit union. Managers of CUs are responsible for the day to day decisions, while the ultimate control of the organization belongs to the general assembly of members-owners. The owner-client structure of CUs can create conflicts among borrowers, savers, and management. Opposition among net borrowers and net savers for control of the institution can lead to a borrower-dominated or saver-dominated credit union. Individual's share capital cannot be traded or sold to others outside of the credit union. The member gets restitution of his/her shares upon resignation from the credit union. The return on share capital is quite limited in a credit union and most often, the organization pays dividends by distributing profits made by the institution to

members or in a form of interest rebates on loans. Credit unions place their excess liquidity with other financial institutions or with the Central Finance Facility (CFF) if one exists. Most often, the CFF is a federation of all credit unions in the system and plays the role of financial intermediary between surplus units and deficit units. The CFF lends directly to credit unions against a fee and is in charge of searching the best investment alternatives for the liquidity it manages.

This study reviews the financial health of the credit union movement in Niger. It specifically reviews the theoretical framework of a CU and derives an empirical model for the Niger movement to test the elements behind its successful performance.

2. Profile of the credit union movement in Niger

In response to the lack of formal financial institutions outside of the main urban areas and given that rural households had to rely almost exclusively on informal financial intermediaries for financial services, WOCCU started a pilot project of CUs in Niger in 1990. The first three-and-a-half years of pilot phase, from 1989 to 1991, were used to develop and promote CUs in the Zinder department where 11 CUs were created during that period. In its current phase, the objective of the project funded by USAID is to promote and extend CU development in other departments such as Maradi, Niamey in addition to Zinder. One specific objective is to create 85 CPECs and reach 8,000 members by August 1997, accumulate FCFA 119 million (US $148,000)[2] in savings, and FCFA 74 million (US $256,000) in loans, and FCFA 128 million (US $238,000) in assets. As of December 1994, there were 37 CPECs in the departments of Maradi, Niamey, Kollo and Tillabery. The project will continue to promote new CUs and provide support services to them, create a representative

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[2] The exchange rate was US $1=FCFA 500 after the devaluation of the currency which occurred in January 1994.

body, and establish a service association staff and physical infrastructure that will be transferred to a national service association at an appropriate time. Credit Unions in Niger function according to the basic operating principles set out by WOCCU for all its affiliated organizations. Membership has been growing at more than a 100 percent per year and as of December 1994, there were 4838 members (3293 men, 1486 women, and 59 institutional accounts). The movement had accumulated FCFA 88.4 million in savings deposits, and FCFA 130.2 million in assets, surpassing the target set for 1997. In the year 1995 alone, 1235 loans were granted to 4838 members for a total amount of FCFA 93.3 million yielding an average loan size of FCFA 75,000. Total loan outstanding was FCFA 50.1 million in March 31, 1995 with an excellent recovery rate of nearly 100 percent.

II. THE THEORETICAL FRAMEWORK OF A CREDIT UNION

Models of financial firm based on profit maximization cannot be readily applied to a CU principally because members of the CU are also the owners and the consumers of its output as well as the suppliers of its input. Thus, the CU has to intermediate between its member-savers and member-borrowers. That heterogeneity in the membership is an inherent source of conflict between CU members and standard theoretical models of cooperatives organizations do not address that issue. A theoretical framework that takes into account CUs' unique characteristics was finally developed by Smith, Cargil, and Meyer (1981). The model is based on two fundamental requirements. First, the specification of the objective function that focusses on the value of CU participation to members. Second, the analysis explicitly considers the possibility of conflict among members, and the resolution of that conflict being a preference to either the borrowers or savers. Smith et al's model is an extension of a previous work by Taylor (1971) and Flannery (1974) to show the different output

decisions for four behavioral motivations: profit maximization, borrower domination, saver domination, and neutrality.

Under a riskless environment assumption, the generalized objective function is:

$$\underset{r_L, r_S}{Maximize} \quad \lambda\, NGL \;+\; \sigma\, NGS \;+\; \pi \tag{1}$$

Subject to:

A balance sheet constraint:

$$L \;-\; S \;=\; D \tag{2}$$

A non-negative operating surplus constraint:

$$\pi \;=\; r_L\, L \;-\; r_S\, S \;-\; r_{DM}\, D \;-\; C_L\, L \;-\; C_S\, S \;-\; \bar{E} \geq 0 \tag{3}$$

Linear specifications of loan demand and savings supply schedules are:

$$L \;=\; \alpha(r_{LM} - r_L), \qquad \alpha > 0 \tag{4}$$

$$S \;=\; \beta(r_S - r_{SM}), \qquad \beta > 0 \tag{5}$$

The Net Gain on Loans (**NGL**) is the value to the borrower and is represented by the difference between the CU loan rate, r_L and the best alternative market rate, r_{LM}, times the level of loan activity L. The Net Gain on Savings (**NGS**) is represented by the difference between the CU dividend rate on savings r_S, and the best alternative market rate available r_{SM}, times the level of

savings S. The weighting parameters λ and σ are used to deal with the issue of saver vs. borrower-dominated as well as neutral credit union.

L is the level of loans ($L \geq 0$), S is the level of share deposits ($S \geq 0$), and $D \geq \leq 0$ is the level of debt issued if $L > S$ (e.g. borrowing from a central liquidity facility) or is the level of money market investment if $L < S$.

The nonnegative operating surplus (π) is what is available for distribution to members as an interest rebate on loans or a bonus dividend on savings. It takes into account the exogenous rate $\mathbf{r_{DM}}$ which is assumed to be the same irrespective of whether D is a debt issue ($D>0$) or investment ($D<0$). The average cost of processing loans is $\mathbf{C_L}$, and $\mathbf{C_S}$ is the average cost of servicing savings accounts. Both costs are assumed to be constant. $\bar{\mathbf{E}}$ is defined as the sum of all fixed expenditures. This includes the cost of renting capital equipment, building space and any other costs associated with providing non-financial services to members. The linear specifications of loan demand schedule (4) and savings supply schedule (5) are used to complete the model. Equation (4) says that the quantity of loans demanded is proportional to the spread between the CU loan rate, r_L, and the best alternative market rate r_{LM}. The market rates r_{LM}, and r_{SM} are exogenously determined.

The CU chooses the optimal loan and dividend rates, r_L^* and r_S^*, to maximize a function of the total net gain available to its membership subject to the non-negative surplus constraint and balance sheet constraint. The model assumes that the parameters λ and σ are scaled such that their values fall between zero and one under the different cases of profit maximization, borrower domination, saver domination, and neutrality between borrower and saver interests. Smith et al. argue that there are good reasons to believe that a CU would usually adopt the equal treatment case, i.e., maximize the total gains to both borrowers and savers, especially if the membership is equally

distributed between savers and borrowers. Under **Neutrality** ($\lambda = 1, \sigma = 1$), the CU's objective is to maximize the total gain to its borrowers and savers. The surplus is distributed equally between lower interest costs to borrower and higher dividend rates to savers. With a binding surplus constraint ($\pi^*=0$), the optimal rates are:

$$\frac{r_{DM} + C_L}{2} - \frac{r_{LM} - r_{DM} - C_L}{2} \cdot [1 - \frac{4\bar{E}}{\alpha(r_{LM} - r_{DM} - C_L)^2 + \beta(r_{DM} -} \quad \textbf{(6)}$$

$$\frac{r_{SM} - C_S}{2} - \frac{r_{DM} - r_{SM} - C_S}{2} \cdot [1 - \frac{4\bar{E}}{\alpha(r_{LM} - r_{DM} - C_L)^2 + \beta(r_{DM} -} \quad \textbf{(7)}$$

In a neutral CU, savers will be paid a rate of interest on savings deposits that is higher than the rate paid in the profit maximizing CU, and borrowers will be paid a rate on loans that is lower than that of a profit maximizing CU. Also, the loan rate for a borrower oriented CU will be less than a neutral CU and the dividend rate will also be less than the one prevailing in a neutral CU. In a saver-dominated CU, both the loan rate and the dividend rate will be more than in a neutral CU. Thus, a borrower-dominated CU will issue more debt or invest less than if equal treatment were the norm; and a saver-oriented CU will issue less debt or invest more than in a neutral CU.

Empirical test of the Smith et al. model by Patin and McNiel (1991) revealed that the majority of CUs in the USA exhibited relatively balanced behavior, although some CUs exhibited tendencies towards saver-dominated or borrower-oriented behavior.

III. AN EMPIRICAL MODEL FOR THE NIGER CREDIT UNION MOVEMENT

1. The Empirical Model and Data

Application of Smith et al. theoretical framework is not always possible in developing countries where markets are fragmented and incomplete. Poyo (1986) tested a modified version of the Smith et al. model for the purpose of testing it in a developing country environment, i.e. Honduras. The purpose of empirically testing the behavior of a CU movement like the one in Niger is to find out which indicators of future financial stability would remain the same or change in the future as well as the direction of the change when it occurs. The following model for Niger CUs is an adaptation of Poyo's (1986) model developed for CUs in Honduras itself derived from the Smith et al. theoretical framework and adapted to a developing country setting. Poyo estimated a simultaneous seven-equation model that included three savings supply equations, three price setting equations, and a loan rationing equation. Due to the nature of the Niger data and environment, the present empirical model will include only one savings supply equation and one loan rationing equation to be solved simultaneously in a system. The model derived below assumes that CUs in Niger operate in highly imperfect and fragmented financial markets. Access to formal financial services by the rural population is non-existent or limited at best. People in rural areas have to rely almost exclusively on the informal financial intermediaries of friends, relatives, money-keepers and money-lenders. The model is the following:

$$T = \alpha_0 + \alpha_1 LSRATIO + \alpha_2 NLMB + \alpha_3 MBSIZE + \alpha_4 FEMAI + \alpha_5 RMARADI + \alpha_6 UMARADI + \alpha_7 RZINDER + \alpha_8 UZIND \quad (8)$$

where the Greek characters α_i, and β_i, are the coefficients associated with each variable I, and ϵ_i are the error terms associated with each equation. The data is a cross-sectional time-series data (1990-

$$ITIO = \beta_0 + \beta_1 SAMT + \beta_2 NLMB + \beta_3 MBSIZE + \beta_4 INTRA$$
$$\beta_5 AGE + \beta_6 SALARYM + \varepsilon_2 \quad (9)$$

1994) obtained from WOCCU-Niger for all 37 CPECs. Quarterly data were used for all quantitative variables used in the regression.

2. Estimation Results

The simultaneous two-equation model is estimated by the two-stage least square (2SLS) procedure using quarterly data available for all 37 credit unions since 1990 for the oldest CUs to one quarter for the three youngest CUs. There is a total of 260 data points or observations. The variables used in the estimation are defined in table 1. The unbalanced nature of the cross-sectional time-series data set makes the presence of autocorrelation very likely. However, attempts to correct for the suspected autocorrelation remained unsuccessful due to the small sample size for individual credit unions. A larger sample that includes an additional 12-20 quarters is needed to successfully use this procedure. A model with autocorrelation will still give unbiased estimators.

The results of the simultaneous equation system are presented in tables 2 and 3 and show good individual R-squares and adjusted R-squares of 0.63 and 0.62, and 0.54 and 0.53, respectively, for the savings supply and loan rationing equations. All but one variable are significant in the savings supply equation, while all variables in the loan rationing equation are significant at either one or 10 percent level. The results of the savings supply equation in table 2 show that, as expected, the loan to savings ratio (LSRATIO), the average number of loans per member (NLMB), the total

membership size (MBSIZE), the percentage of female members (FEMALE), and the dummy variables (RMARADI, RZINDER, and UZINDER) representing rural credit unions in the Maradi and Zinder regions, and urban credit union in the Zinder region, all have the expected signs and are significantly related to the amount of mobilized savings deposits. All variables are significant at the 1 percent level.

These results indicate that increasing loans to members as is reflected in LSRATIO and NLMB will have a positive influence in increasing members deposits. Also, an increase in membership size (MBSIZE) naturally leads to a significant increase in savings deposits because all CU members are savers first. The female membership (FEMALE) also plays a positive influence on the total stock of deposits as expected. Women are known to make small but frequent deposits in the CU and to remain net savers in general. Credit unions located in rural areas of Maradi and Zinder departments (RMARADI, RZINDER) are shown to generate less savings than those in Niamey (the control dummy variable for department). This result is as expected given that Niamey is a wealthier area than both Maradi and Zinder. By comparison, UZINDER is shown to generate more savings than urban Niamey principally because CUs in Zinder are among the first established in the country and have a longer history of a well organized savings mobilization program.

The results of the loan rationing equation are presented in table 3 and show that all variables are statistically significant at either one or 10 percent level. The negative relationship of the stock of savings deposits (SAMT) with the loans to savings ratio (LSRATIO) is an indication that the CU loan multiple policy does not match the increase in members savings. That is, the maximum loan size members can obtain as a multiple of their deposit account balance does not increase to reflect the increase in members' deposits, reflecting a very risk averse lending policy. The number of

months the CU has been in operation is represented by the AGE variable which is significantly negatively related to LSRATIO indicating that CUs in Niger did not exploit their maximum loan potential with time. The effective interest rate (INTRATE) is positive and significant indicating that an increase in interest rate does not deter members from applying for loans. This may be an indication that these rates are seen as competitive if the member-borrower compares them with alternative informal financial rates. Membership size (MBSIZE) and the proportion of female members (FEMALE) are positively significantly related to LSRATIO confirming the knowledge that more members and especially more female members positively influence the stock of savings which consequently increases the number and amount of loans granted. The incentive given to CU managers by paying them a salary is shown to be paying off with SALARYM positively and significantly related to LSRATIO. Paid management whose performance is reflected in their salary will consequently work hard at mobilizing savings as well as providing members with loans.

VII. CONCLUSIONS

This study has investigated the performance of the CU movement in the Nigerian financial markets and found the young movement to be healthy and rapidly growing both in membership as well as assets, and deposits. The econometric model results point to several elements that are at the core of the growing movement and will affect its future growth. Thus, women appear to be an important positive element in savings mobilization. Also, members value highly access to loans which potentiality is an incentive for saving with the institution. The use of market rates of interest on loans does not seem to deter members from borrowing from the CUs instead of going to the local money lender. Using strictly members mobilized savings as loan sources instead of relying on

external funds was crucial in determining the long term viability and sustainability of the CUs in Niger.

Table 1: Description of Variables Used in Regressions

Variable	Description and Measurement Unit	Mean	Standard Deviation
SAMT	Stock of savings deposits in FCFA	FCFA 1,312,232	2110361
LSRATIO	Loan to savings ratio	FCFA 18.65	28.59
NLMB	Number of loans per member	0.11	0.34
MBSIZE	Average membership size	109.70	72.02
FEMALE	Proportion of female membership in percent	31.51	35.87
RMARADI	Dummy for rural Maradi CU	0.15	0.36
UMARADI	Dummy for urban Maradi CU	0.07	0.26
RZINDER	Dummy for rural Zinder CU	0.58	0.49
UZINDER	Dummy for urban Zinder CU	0.08	0.28
INTRATE	Effective interest rate	23.48	25.03
AGE	Number of months the CU has been in operation	17.39	14.72
SALARYM	Dummy for paid management	0.43	0.50

Source: WOCCU/Niger data base.

Table 2: 2SLS Estimation Results of the Savings Supply Equation

Variable	Parameter	Parameter Estimate	t-statistic
Constant	α_0	-617667*	-1.74
LSRATIO	α_1	13641**	2.26
NLMB	α_2	1092762***	3.21
MBSIZE	α_3	18354***	12.00
FEMALE	α_4	6511.7***	2.43
RMARADI	α_5	-1517504***	-3.65
UMARADI	α_6	-986677	-0.22
RZINDER	α_7	-899287***	-2.84
UZINDER	α_8	1205284***	2.76
R-Square	0.6330		
Adj R-Square	0.6213		

Source: WOCCU-Niger database.
Note: *, **, *** denote significance a the 10, 5, and 1 present level respectively.

Table 3: 2SLS Estimation Results of the Loan Rationing Equation

Variable	Parameter	Parameter Estimate	t-statistic
Constant	β_0	-9.284411***	-2.97
SAMT	β_1	-0.000004702***	-2.79
NLMB	β_2	17.480172***	3.74
MBSIZE	β_3	0.132389***	3.48
INTRATE	β_4	0.678425***	8.30
AGE	β_5	-0.209562*	-1.83
SALARYM	β_6	12.531164***	3.76
R-Square	0.5381		
Adj. R-Square	0.5272		

Source: WOCCU/Niger database.
Note: *, and *** denote significance at the 10 and 1 percent level respectively.

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